

**BLM SMOKEJUMPERS
BOISE, IDAHO
FAIRBANKS, ALASKA**

RIGGING INSTRUCTIONS FOR THE BLM RAM-AIR MAIN PARACHUTE

**Compiled in Boise, Idaho
January, 2011**

- 1.) Insure that the canopy has been inspected. The importance of a thorough inspection whether in the field or at a base cannot be stressed enough.



- 2.) Tools required:
- pull-up cord approximately 36"
 - tension device
 - pen
 - sharpie
 - tape, masking
 - ring locator ribbon

Optional tools:

- packing paddle



- 3.) Attach the risers to the tension device with the toggles up and the Reserve Static Line (RSL) system ring on the left.



4.) Lay the canopy on its left side and shake it out using the packing tabs. DC-7s have seven packing tabs per group.



5.) Pull out the bridle ring and attach the ring locator ribbon or pull-up cord. This step is done to help prevent a rogue drogue.



6.) Start the 6-line check by clearing and untwisting the steering lines starting from the canopy working to the toggles.



- 7.) Straighten the cross tie. It should be clear of all lines and have no twists. It is attached to the inside of the connector links of the rear riser. The connector links marks need to be checked to ensure they are tight and aligned properly.



- 8.) Continue the 6-line check with the outside D-lines. Stabilizers are attached to the outside D-lines at the slider stops.



- 9.) Follow each line down through the slider grommet to the connector link, making sure the lines are clear and are attached to the outside of the connector links. Be sure there are no twists in the risers.



10.) Continue the 6-line check. Hold the outside A-lines and work to the risers.

11.) Again follow each line through the slider grommets to the connector links. Make sure they are clear and attached to the outside of the links. The plastic sleeves covering the connector links are slider bumpers. They protect the slider grommets from damage when striking the links during deployment.



12.) Flake the canopy. Grasp and pull out the non-load bearing seams and fold the load bearing seams between them (The packing tabs are attached to the non-load bearing seams, there are seven).



13.) Flake the tail. Then fold it over onto the canopy.



14.) Flake the nose of the canopy.



15.) Fold the nose under and even with the A-lines. Do not twist the A-lines.



16.) S-fold the B-lines over the A-lines. Stack the line groups on top of each other. S-folding distributes equal amounts of canopy fabric to each side of the stacked line groups.



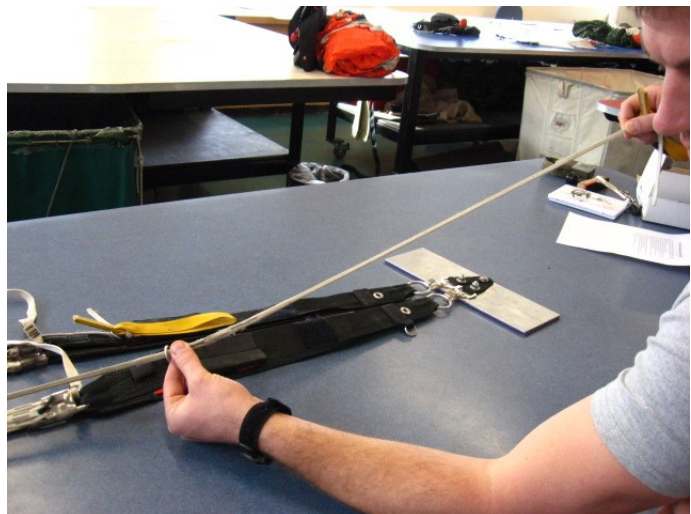
17.) S-fold the C-lines and the D-lines onto the stack.



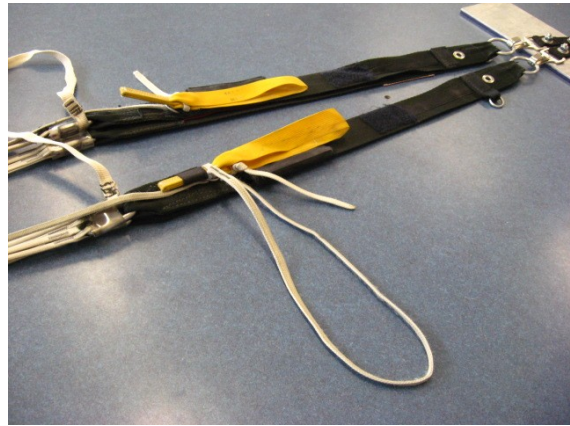
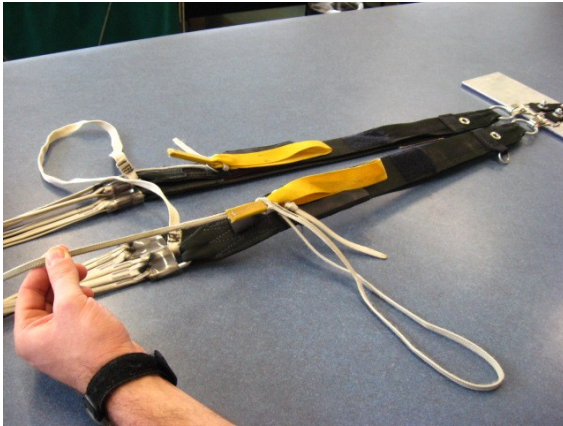
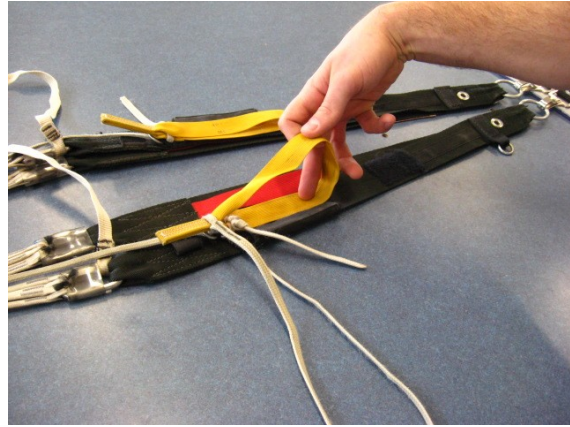
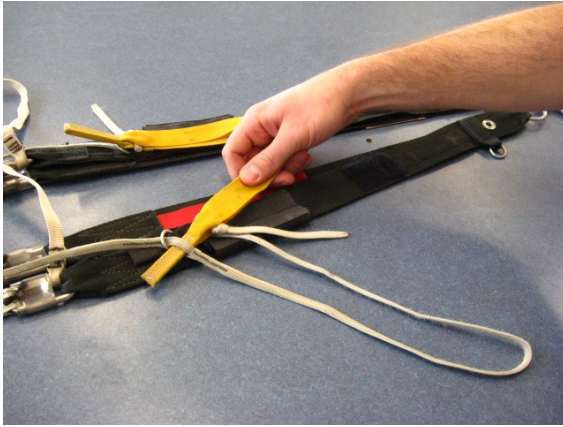
18.) Lay the tail to the right of the canopy and slide the canopy to the left edge of the table. When rigging on the ground you can leave the canopy in place.



19.) Set the brakes. Pull the steering line down until the sundt is just below the guide ring.



20.) Place the toggle beak through the sundt as far as it will easily go, with the slack of the line towards the Velcro flap. **At this point, mate the Velcro and tug on the steering line to make sure that the brakes are set properly.** Stow the toggle beak in the keeper.



21.) S-fold the slack in the steering line into the pocket created by the Velcro flap.



22.) Repeat step 20/21 on other brake.



23.) Clear the stabilizers from the line groups.



24.) With the stabilizers properly dressed, all the lines should be visible up to their canopy attachment points. Re-establish equal line tension.



25.) Re-flake the tail. One at a time, place the seams in the center and fold the fabric between them towards you. When the flaking is complete all of the tail will be folded neatly to the left side of the canopy.



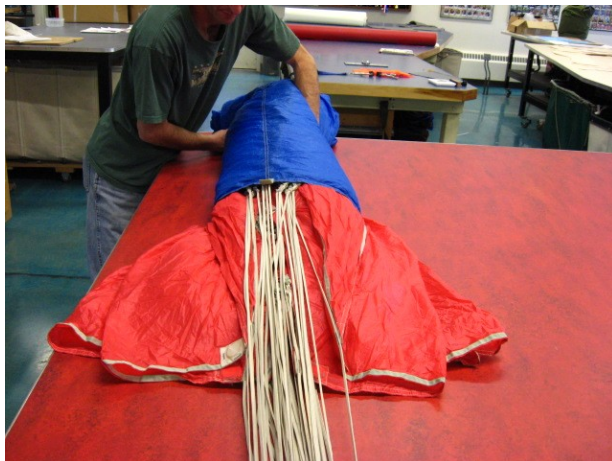
26.) Split the tail evenly by folding the top half of the tail over the right side of the canopy. There is a loop sewn on the trailing edge on the center of the canopy that can be used as a reference point.



27.) Pull out the seam on both sides of the tail's center (be careful not to pull apart the rest of the tail). The top flakes will now be twice as wide as the rest of the tail.



28.) Wrap the center section of the tail around and under the canopy. **Keep lines centered** and do not pull apart the canopy stack underneath. Make the width of the wrapped canopy slightly wider than the D-bag. You have now formed the squid.



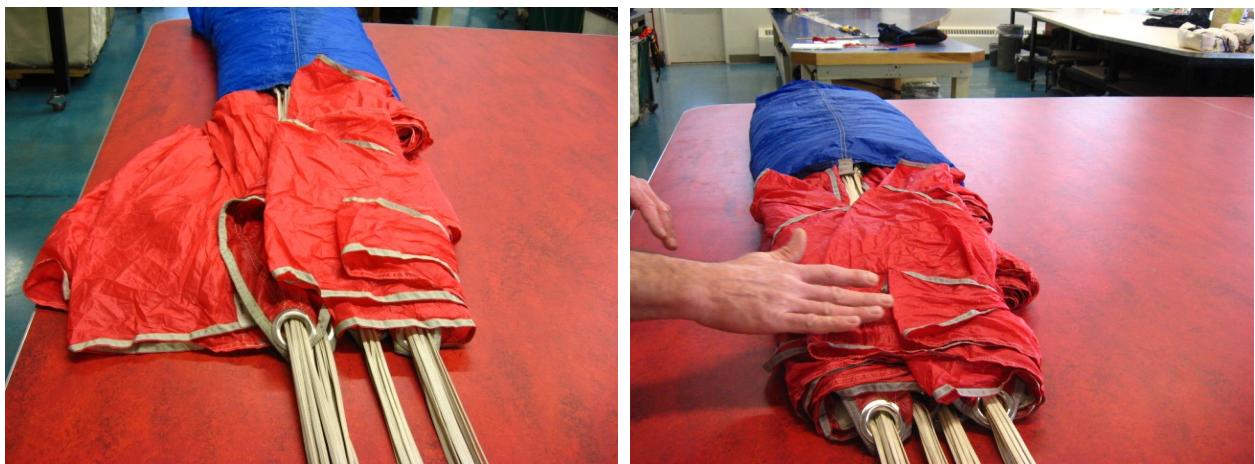
29.) Check the slider for proper positioning. Spread the risers apart. The reinforcement tape on the slider should be facing up and there should be no twists or lines crossing in the slider or the line groups.



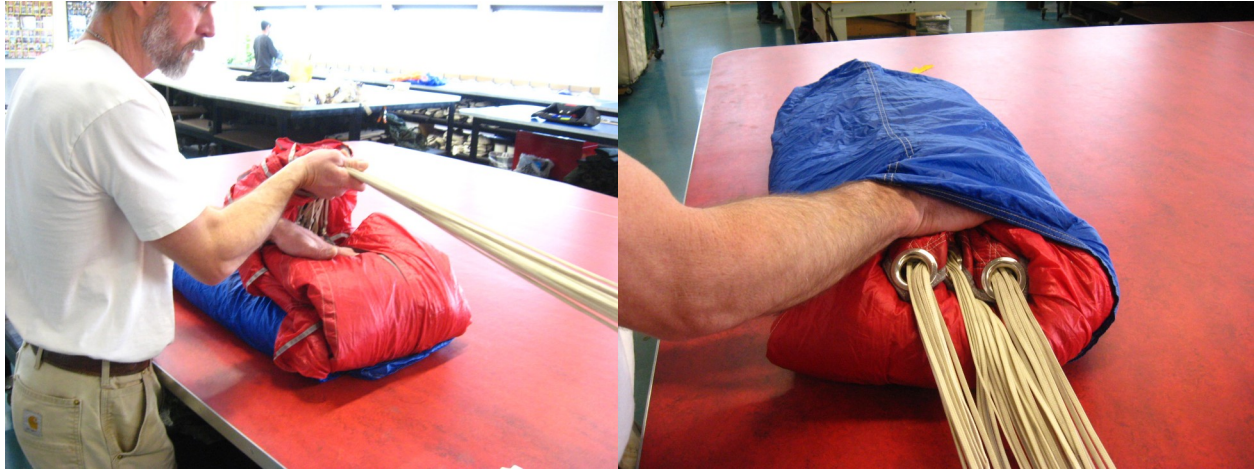
30.) Bring the slider all the way up to the slider stops. Dress the slider so that it is laying neatly against the slider stops.



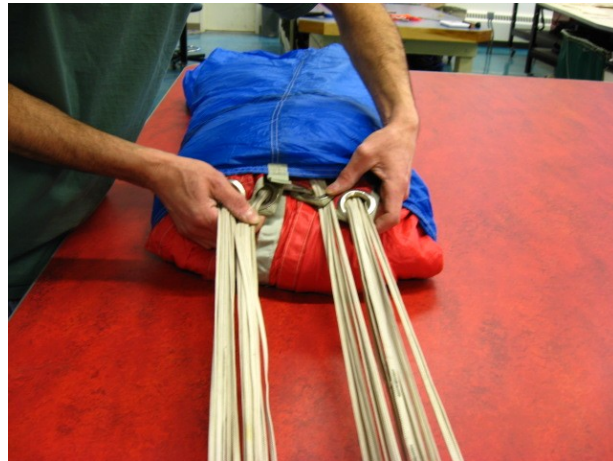
31.) Fold the stabilizers over the slider. Do not alternate.



32.) S-fold the stabilizers and the slider. Make this fold a little shorter than the length of the D- bag. Tuck this fold under the tail.



33.) Split the lines into the left and right line groups. Separate the line groups 6-8 inches.



34.) Fold the top of the canopy over the stabilizers and slider. Grasp the top of the canopy from underneath capturing the outer layers of fabric and using them to control the canopy as you make the fold. Make the fold equal to the length of the d-bag.



35.) **When rigging in Alaska, expose the nose.** While still gripping the outer layers of fabric, pull out and expose the nose. Spread the exposed nose evenly across the width of the canopy. Count the exposed cells to make sure you have exposed the entire nose. There are 7 cells. **When rigging in the lower 48, do not expose the nose.**



36.) Fold the upper part of the canopy over the first fold maintaining the dressed width of the canopy. If packing tab rubber bands have not been removed, remove them at this time. Locate the drogue bridle attachment on the main canopy. (Below is Boise S-Fold)



37.) Locate the French link attached to the kill line in the D-bag. Announce out loud that you are hooking up the drogue. Attach the French link to the bridle ring. Close the barrel finger tight. Pay close attention during this step. Remove the ring locator ribbon from the bridle ring. Visual inspection is necessary to guarantee that the threads of the French link have fully engaged. A rogue drogue is embarrassing and expensive.



38.) Pull the d-bag over the end of the canopy. Push the canopy most of the way into the D-bag, pull the French link against the grommet, and then push the canopy into the D-bag as far as possible.



39.) Make sure that the French link is against the grommet and no material is in-between the grommet and the French link. If necessary, slip your hand inside the D-bag over the top of the canopy to clear any material that is caught between the link and the grommet.



40.) At this point, the left and right line groups should be separated and the slider grommets should be visible, 2 forward and 2 back. If they are not visible between the folds, they can damage the canopy material on deployment.



- 41.) Make the first locking stow on the left side of the D-bag. Route the left line group out between the left locking stow and the center locking stow. Place the rubber band through the grommet and using only the left line group make the locking stow. This stow is 2 1/2 inches and double wrapped.



- 42.) Make your second locking stow on the right side of the D-bag. Using only the right line group, route the lines out between the right locking stow and the center locking stow. This stow is 2 1/2 inches and double wrapped.



- 43.) The third locking stow is formed by bringing the left and right line groups together at the center locking stow. Use all of the lines to make the locking stow. This stow is 2 1/2 inches and single wrapped.



44.) Form the line stows. Make the first stow to the left side. S-fold the lines across the top of the D-bag using the rubber bands, with a double wrap, to hold the S-folds (stows) in place. The length of the S-folds should be as short as possible and still allow for a bight of about 2 inches + or - ½ inch.



45. Stow the lines, leaving enough line remaining between the risers and the last completed line stow to make a stow with the cross tie.



46.) Straighten the cross tie and lay it on the lines.



47.) Make a 1 ½ inch bight with the cross tie and the lines, double wrap it with the rubber band that is at the center of the closing flap. The distance between this bight and the connector links needs to be long enough to allow the risers to be routed into the corners of the D-bag (approx 5").



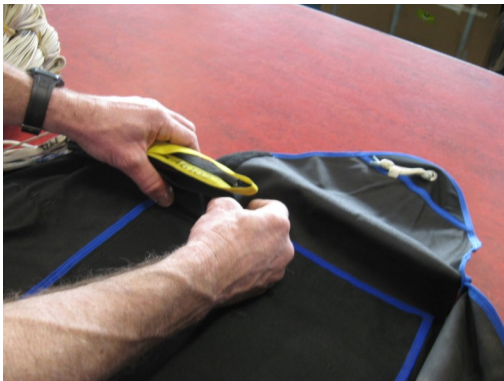
48.) If there is slack in the lines between the cross tie bight and the last line stow, make one more stow to either side to take up this slack.



49.) With the risers still connected to the tension device, place the main container on them with the risers running over the corners of the top flap. Align the Velcro on the risers with the Velcro on the container.



50.) S-fold the risers onto the container and mate the Velcro.



51.) Place the Main D-bag on the container. The three tape reinforcement bands on the deployment bag should be facing up. Disconnect the risers.



52.) Route the risers along the edges of the container and into the corners. The connector links will be against the bottom flap of the container.



53.) Position the closing pin next to the top flap grommet. Mate the Velcro to hold pin in position.



54.) Thread the pull-up cord through the closing loop to its mid point, bring the ends together and use the pull-up cord as one unit. Replace the closing loop if it is worn.

55.) Thread the pull-up cord through the flap opposite the closing loop. Now close the side flaps by pulling on the pull-up cord until the closing loop is through the side flap grommet.



56.) Thread the pull up-cord through the grommet on the bottom flap. Use either the heel of your hand or your elbow to hold the side flaps closed.



57.) Close the bottom flap.



58.) Straighten the bridle/kill line and tuck the slack under the top flap.



59.) Close the top flap. Insert the pin into the closing loop. Seat the pin on its side so it lies flat against the container.



60.) Remove the Pull-up cord. Route the pull-up cord under the closing pin and pull it out slowly, this is too prevent friction causing damage to the nylon closing loop.

Reach under the top closing flap and pull out 1 inch of bridle to create a bight below the closing flap.



61.) Route the bridle straight up from the pin and make a 90 degree turn to the first stow on the left., Which is the parachutes right side. Each stow is double wrapped.



62.) Stow the bridle using all 8 rubber bands. The stows should be uniform in size and double wrapped. Make sure there are no twists in the bridle.



63.) Place the drogue D-bag in the container with the Tupper loop down. The bridle under the drogue should have no twists and the ring lanyard should be routed out between the two rear drogue flaps. The drogue static line runs across the drogue from right to left with the Velcro facing up. Center the rear drogue flaps on the static line Velcro and mate them together.



64.) Grasp the Drogue D-bag and the rear Drogue flaps in both hands and roll forward while pushing down to seat the drogue snugly into the container while keeping the Tupper loop centered under the drogue. Align the front drogue flaps so they are centered and flush with the rear drogue flaps. Mate the Velcro together.



65.) Dress out the container. Make sure all Velcro is mated and the flaps are neat and in place.



66.) Fill out packing data card.

67.) Stow the risers and belly band straps . Place a waterproof bag under the risers. Tuck the bridal ring under the waterproof bag.



68.) Place masking tape on the pin cover flap. **Write your name, the date, the canopy number and the drogue number on the tape.** Fill out your log book and the master log.



69.) Count your tools to make sure they are all accounted for and none of them are rigged into the parachute.

DC-7 BREAKDOWN INSTRUCTOR'S NOTES

TOOLS COUNTED

- CONSEQUENCES OF RIGGING A TOOL IN A PARACHUTE COULD INTERFERE WITH NORMAL DEPLOYMENT

PAPERWORK

- 4 PLACES: TAPE ON CONTAINER, PACKING CARD, PERSONAL LOG BOOK, MASTER LOG BOOK
- REQUIRED BY THE FAA

CONTAINER

- DRESSED NEATLY, NOT LUMPY, NO EXPOSED LINES

VELCRO MATED

- EVENLY MATED AT DROGUE FLAPS, CORNERFLAPS, AND PIN COVER FLAP

RISERS STOWED

- STOWED ON LOWER HARNESS ATTACHMENT BAND

WATERPROOF BAG

- STOWED NEATLY UNDER RISERS

BELLY BANDS STOWED NEATLY

STATIC LINE

- ROUTED TO JUMPER'S LEFT
- UNTWISTED AND TUCKED INTO RIGHT SIDE CLOSING FLAP

DROGUE RING LANYARD

- ROUTED SO THAT THE JUNCTION OF THE BRIDLE AND THE RING LANYARD MEET AT THE OPENING IN THE FLAP

DROGUE D-BAG

- TUPPER LOOP SHOULD BE DOWN
- SOME STATIC LINE ATTACHMENT TAPES MAY HAVE A HALF TWIST DEPENDING ON WHICH SIDE THE HOOK VELCRO IS SEWN

BRIDLE STOWS

- EVENLY SIZED STOWS
- $\frac{3}{4}$ - 1 INCH BIGHTS
- STOWS SHOULD ALLOW ENOUGH SLACK SO THAT THE JUNCTION OF THE BRIDLE AND THE RING LANYARD MEET AT THE OPENING IN THE FLAP
- SHOULD USE ALL THE RUBBER BANDS WITH DOUBLE WRAPS

CURVED PIN

- SEATED AT LEAST $\frac{3}{4}$ OF THE WAY IN

SLACK BELOW PIN

- SLACK IN THE DROGUE BRIDLE BELOW THE PIN SHOULD REACH THE STITCH LINE OF THE PIN COVER FLAP

CLOSED PROPERLY

- SEQUENCE CORRECT, DROGUE BRIDLE SLACK NEATLY STOWED UNDER THE BOTTOM FLAP OF THE MAIN D-BAG

RISERS

- MATED TO VELCRO, STARTS FLAT, TURNS ON ITS SIDE WHEN IT ROUTES TO THE CORNERS.
- SHOULD BE EVEN

LINES / CROSSTIE BIGHT

- 1 $\frac{1}{2}$ INCH BIGHT, DOUBLE WRAPPED
- ENOUGH SLACK FOR THE RISERS TO BE ROUTED TO THE CONTAINER'S CORNERS

LINE STOWS

- 1 $\frac{1}{2}$ - 2 $\frac{1}{2}$ INCH BIGHTS, DOUBLE WRAPPED
- EVEN LINE TENSION – NO "SPAGHETTI"
- NEATNESS

LOCKING STOWS

- 2 ½ INCH BIGHTS, MIDDLE IS SINGLE WRAPPED, OUTSIDES DOUBLE WRAPPED
- EQUAL LINE TENSION IN BOTH GROUPS

FRENCH LINK

- CLEAR OF MATERIAL BETWEEN LINK AND GROMMET
- ATTACHED WITH BARREL ADVANCED UNTIL FINGER TIGHT

CANOPY STACK

- FOLDS EVEN SIZE AND SHAPE
- EQUALLY DISTRIBUTED THROUGHOUT BAG

NOSE

- IF EXPOSED, THE SEVEN CELLS SHOULD BE CENTERED AND EXPOSED TO THE WIDTH OF THE STACK

SLIDER

- SHOULD BE TIGHT AGAINST SLIDER STOPS
- NOT INVERTED – TAPE UP
- WHEN SLID TO RISERS THE FORWARD GROMMETS SHOULD LIFT REAR RISERS

LINES CENTERED

- CENTERED OVER CANOPY S-FOLDS AND PRECEDING LINE GROUPS
- LINES SHOULD BE VISIBLE TO THEIR ATTACHMENT POINTS

STABILIZERS

- STABILIZER MATERIAL CLEAR OF LINES
- NOT FOLDED ALTERNATELY SIDE TO SIDE
- NEAT

TAIL FLAKED NEATLY

- CENTERED
- NOT SPREADING APART
- SPLIT EVENLY

BRAKE STOWS

- TOGGLE BEAK THROUGH SUNDT BELOW GUIDE RING
- BEAK THROUGH ELASTIC KEEPER
- NO ADDED TWISTS
- LINE ROUTED TO CENTER OF RISER
- ALL EXCESS LINE NEATLY STOWED IN POCKET

CANOPY S-FOLDS

- LINE GROUPS AND S-FOLDS SHOULD BE CENTERED OVER EACH

4-LINE

- CLEAR AND ATTACHED TO OUTSIDE OF FRENCH LINKS

STEERING LINES CLEAR

- UNTANGLED / UNTWISTED
- ABOVE AND FREE OF OTHER LINES

GENERAL NEATNESS

- GENERAL IMPRESSION OF OVERALL PACK JOB